ADUS From A Traffic Monitoring Perspective

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Issues

- Data Sources
- Quality control (QC)
- Mapping sensors to sites
- Summarization
- Data retention
- Database issues
- Data access

Data Sources

- Conventional traffic monitoring devices (volume counters, vehicle classifiers, weigh-in-motion devices).
- Freeway traffic management centers.
- Urban traffic management centers.
- Other ITS subsystems.
- Other non-ITS sources (*i.e.*, signal controllers).

Data Sources, cont.

- Differences between TMC and traffic monitoring device (TMD) data
  - TMD data are already structured in space and time for the planning view.
  - TMD outages tend to be rare and total, whereas TMC data tends to have numerous “holes” scattered in space and time.
  - TMC data tend to be voluminous, relative to traditional traffic volume data.

Mapping Sensors to Sites

- Traditional TMDs are pretty much hard-wired.
- TMC data are usually at a sensor level.
- Traffic data collection “sites” are usually *post hoc*, and might require some creativity.
- Keeping in mind that an AASHTO “standard” site requires contemporaneous data collection across the entire roadway.

Quality Control

- The “Swiss cheese” nature of the data makes traditional QC procedures useless.
  - AASHTO procedures require a full day of data for all lanes for permanent devices.
  - Most days would not pass these tests.
- Perfect solution: fix the TMC sources.
- Necessary solution: change the QC and summarization rules.
- In any case, QC must be performed at several points in the analysis process.

Data Summarization

- Granularity: detailed data, daily summary, weekly summary, monthly summary, annual summary.
- If the summaries are maintained, status information is required.
- To be able to use TMC data effectively, new summarization rules are required.

Summarization, cont.

- New summarization procedures will require statistical research.
- Chaparral is currently addressing part of the problem.
  - Using freeway TMC data.
  - With the empirical precision approach.
  - Status: have developed several test data sets.

Data Retention

- The issue(s): how much data at what level of granularity should be retained for how long?
- Our approach: use a database that supports partitioning, so that pieces can be easily moved offline.
- We would recommend keeping detailed data online for 1-2 years, daily summaries for about 5 years, weekly for 10, monthly and annual forever.

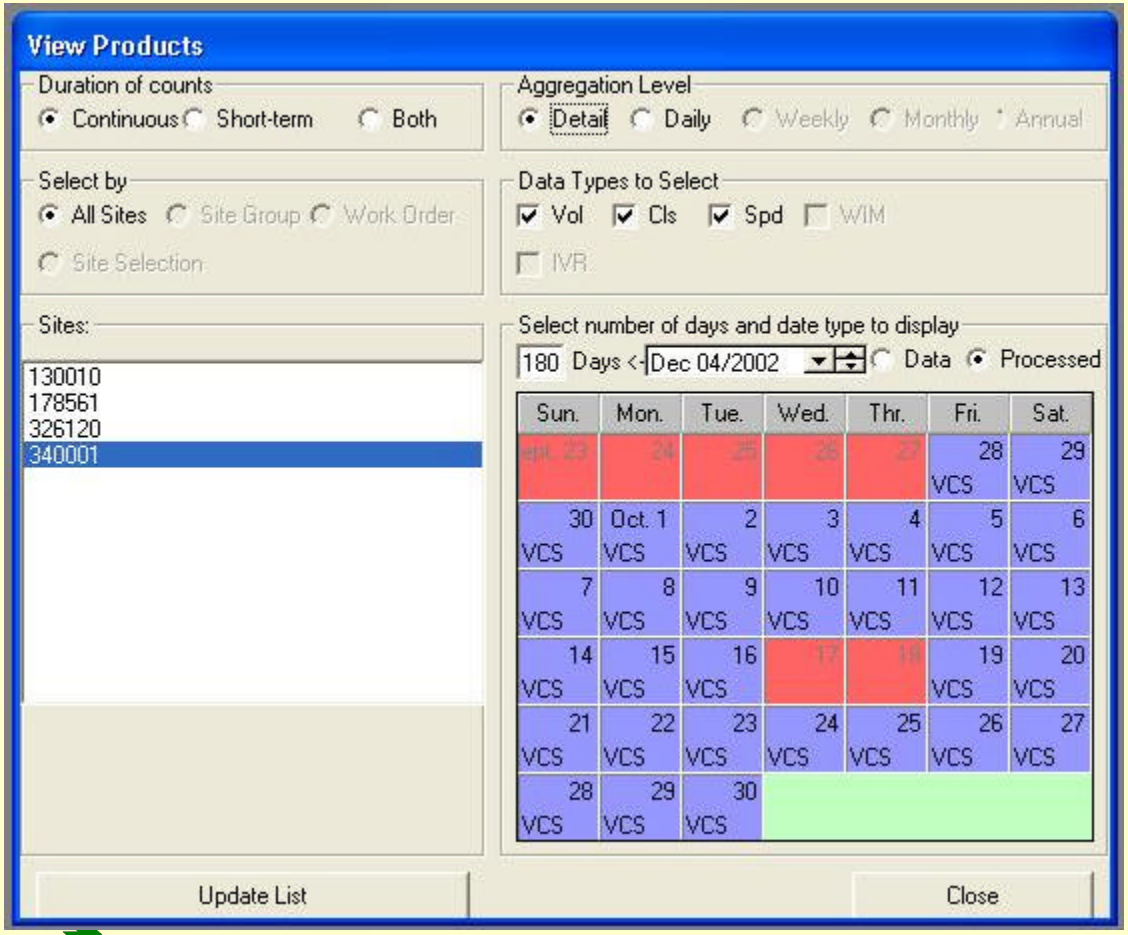
Database Issues

- We recommend separating the ADUS database from the operational database.
  - Operations tends to be transaction-oriented.
  - ADUS tends to be decision-support oriented.
  - Indexing and schema strategies are different for the two.
  - Unless they are designed together, ADUS shouldn't muck with operations.

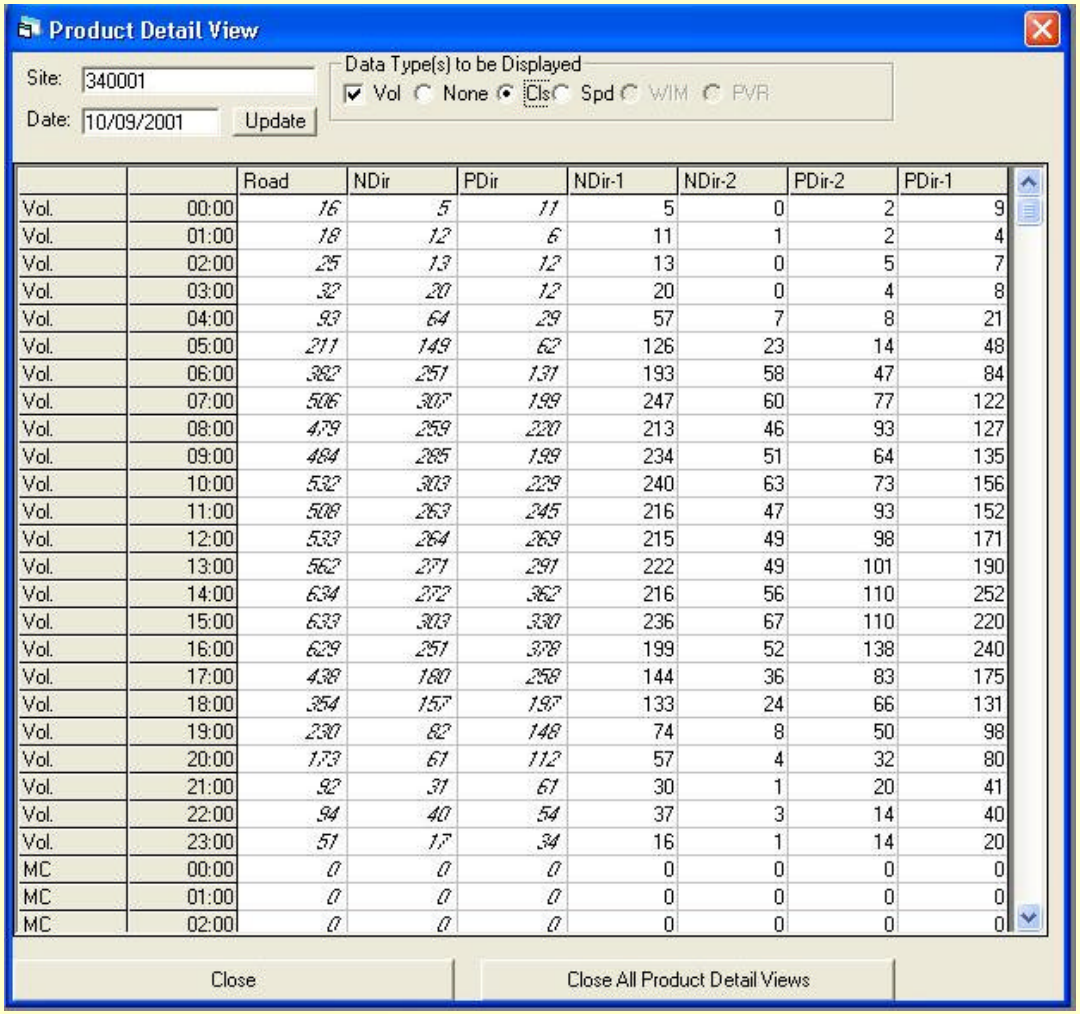
Data Access

- Should allow a coherent view of the system in as small a space as possible.
- The system should allow any reasonable access mechanism.
- In other words, it should be in a database with sufficient power to support client-server or web access.

Example Data Access Form



Example Of Selected Data



		Road	NDir	PDir	NDir-1	NDir-2	PDir-2	PDir-1
Vol.	00:00	16	5	11	5	0	2	9
Vol.	01:00	18	12	6	11	1	2	4
Vol.	02:00	25	13	12	13	0	5	7
Vol.	03:00	32	20	12	20	0	4	8
Vol.	04:00	93	64	29	57	7	8	21
Vol.	05:00	211	149	62	126	23	14	48
Vol.	06:00	382	251	131	193	58	47	84
Vol.	07:00	506	307	199	247	60	77	122
Vol.	08:00	479	259	220	213	46	93	127
Vol.	09:00	484	285	199	234	51	64	135
Vol.	10:00	532	303	229	240	63	73	156
Vol.	11:00	508	263	245	216	47	93	152
Vol.	12:00	533	264	269	215	49	98	171
Vol.	13:00	562	271	291	222	49	101	190
Vol.	14:00	634	272	362	216	56	110	252
Vol.	15:00	633	303	330	236	67	110	220
Vol.	16:00	629	251	378	199	52	138	240
Vol.	17:00	438	180	258	144	36	83	175
Vol.	18:00	354	157	197	133	24	66	131
Vol.	19:00	230	82	148	74	8	50	98
Vol.	20:00	173	61	112	57	4	32	80
Vol.	21:00	92	31	61	30	1	20	41
Vol.	22:00	94	40	54	37	3	14	40
Vol.	23:00	51	17	34	16	1	14	20
MC	00:00	0	0	0	0	0	0	0
MC	01:00	0	0	0	0	0	0	0
MC	02:00	0	0	0	0	0	0	0

The CEO Says:

That’s all, folks!

Thanks for your time.